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Contaminating the Hallowed Maternal Body

A Feminist Approach to the Dilemma of Endocrine Disruptors on Maternal and Child Health

Industrialization and “development” during the last 200 years have led to an increase of pesticides, an intensified use of synthetic chemicals, higher levels of environmental pollution, and more exposure to hazardous working conditions. Environmental toxicants, many of which are endocrine disruptors, are stored in fat tissue, increasing reproductive health risks for both women and men. Women’s bodies are particularly vulnerable as sites for creating, growing, feeding, and nurturing the next generation. And yet, women’s lives are consistently devalued, especially in a capitalist economy, so that a woman’s rights to her own reproductive health are no longer guaranteed. In this paper I review the significance of environmental toxicants on women’s reproductive bodies. I discuss the need to utilize feminist theory effectively and actively, to ensure women the rights to their health. Feminist discourse offers a useful perspective from which to assess the need for policies that address the problem of endocrine disruptors in terms of women’s reproductive health and the health of future generations. Finally, the significance of endocrine disruptors on maternal health is frightening when we consider breast milk contamination and its impact on future generations.

Women’s bodies are particularly vulnerable as sites for creating, growing, feeding, and nurturing the next generation and yet, women’s lives are consistently devalued in a capitalist economy in such a way that a woman’s right to her own reproductive health is no longer guaranteed. In this essay I will address my concern with toxicants in our environment and how they impact women’s reproductive systems. Due to the generational nature of some endocrine disruptors, biological differences between male and female bodies, and the simple fact that females are currently the sole carriers for future generations, I contend that we must begin to think creatively and beyond corporate interests to protect the health of all humans and our future generations. Feminist

discourse is a suitable, and perhaps necessary, location to begin to assess the significance of environmental toxicants on maternal health. Finally, I address the contamination of breast milk, an issue concurrently personal and political, to underscore the urgency of protecting our bodies and our children's bodies from toxic environmental exposures.

Woman's body as the first environment

The placenta, the brain, and the testicles are the only known barriers in the human body that can block potentially damaging substances.¹ And yet, contrary to a long-held popular belief, the placenta is not impenetrable. The placental membrane works as a barrier to prevent bacteria and unneeded hormones from reaching the fetus. Toxic chemicals, however, often easily pass through the placenta, despite their capability to cause serious harm.² Pregnancy locates women in a strange place: it is the beginning of her bodily capacity to protect her baby, and at the same time, a potential source of harm often beyond her control.

Early in my pregnancy my world changed rather quickly and in several unexpected ways. For instance, as I went to clean the bathrooms one afternoon, I stopped myself in a panic. I realized that I did not know which was more dangerous to my growing baby: the dirt that had accumulated or the chemicals in the cleaning products I was about to use. I could not clean the bathrooms. A simple walk around the neighborhood now felt like a perilous adventure. The "Warning: Pesticide Application" signs seemed more threatening, car exhaust was doubly noxious, and the smelly waste management processor on the corner next to the playground made my head spin with nausea and fear. The world seemed like a different place, one that made me feel especially protective of the little being growing in my womb.

Since living in a toxic-free bubble was not an option, I had to find ways to negotiate my fears with a realistic way to go about my day. I ate organic food when possible. I held my breath whenever trucks passed by releasing dirty exhaust into the air. I circumvented cigarette smokers. I did *not* clean the bathrooms. However, I did administer flea medication, an insecticide, to my cat. I did eat fish, occasionally raw fish, and fish known to have high levels of mercury and other toxicants. I did go for walks around my neighborhood, despite the pesticide applications. I have always been an advocate for environmental sustainability, but once I became pregnant, I acquired a new sense of urgency for the removal of toxicants from our environment. I am truly confounded that women must continually mediate these threats to our health and the health of our children, but hopeful that we can begin to develop strategies that will better protect our reproductive bodies from the toxicants that currently pervade our world.

Environmental toxicants and maternal health

Over the last 200 years, industrialization, "development," and "science"

have led to an increase of pesticides in our foods, an increased use of synthetic chemicals, higher levels of environmental pollution, and more exposure to hazardous conditions at work and at home, in the United States and globally.³ Many of these environmental toxicants are also known in the scientific literature as environmental estrogens, endocrine disruptors, or xenoestrogens. Endocrine disrupting chemicals (herein referred to as EDCs) are chemicals that alter the body's normal hormonal processes (Schettler et al., 1999). EDCs can have a number of effects on the reproductive system, such as mimicking the hormone's natural response, activating a stronger or weaker response, or blocking hormonal activity by occupying the receptor site (Hollander, 1997).

Chemicals such as Dioxin (2,3,7,8-tetrachlorodibenzo-p-dioxin, or TCDD), furans, DDT (1,1,1-trichloro-2,2-bis(chlorodiphenyl)ethane), PCBs (polychlorinated biphenyls), and PBDEs (polybrominated diphenyl ethers), are just a few of many known or suspected EDCs (LaKind, Berlin, and Naiman, 2001; Sonawane, 1995). Exposure to these toxic chemicals occurs primarily through ingestion, but also through inhalation, drinking water, and perhaps most disconcerting, through breast milk. Many of these EDCs are designated as persistent organic pollutants (POPs), due to their ability to travel far distances, their long life spans, and their ability to bioaccumulate in the environment and biomagnify in the food chain. POPs are also lipid-soluble, meaning that they bioconcentrate in fatty tissues of the body. The accumulation of POPs in fatty tissues is particularly relevant for women and their children because POPs cross the placenta and are excreted through breast milk (Ayotte et al., 2003; Fisher, 1999). Even though some pesticides such as DDT and PCBs are no longer used in the United States, they continue to pollute the environment and its inhabitants as they work their way up the food chain. Wind and water carry POPs to even the most remote locations of the globe and as they bioaccumulate, they become more toxic, becoming a serious health threat to people living in indigenous communities that rely on fish and wildlife as part of their diet (Colborn, Dumanoski, and Myers, 1997; Schettler et al., 1999). PCBs and other EDCs have been found in mammalian species in remote areas of the world such as the Inuit community in Arctic Quebec, Canada, where PCB concentrations in women's bodies are significantly high (Ayotte et al., 2003).

Biological differences matter

Biological differences between men's and women's bodies influence the ways in which endocrine disruptors affect the body. The female body on average is physically smaller than the male, and with higher percentages of body fat. Many environmental toxicants are stored in fat tissue in the body, which potentially increase the risks for women in particular (Beauregard, 1997; Mattison, 1999). Lynne Beauregard (1997) explains that "Because women possess a greater percentage of body fat than do men, they may be more heavily burdened. Pregnancy, breast-feeding, dieting, menopause, and aging can serve to release stored toxins into the blood, posing health risks to women and their offspring"

(190). In addition to the harmful effects endocrine disruptors may cause to a woman's body, xenoestrogens, unlike most natural estrogen, cross the placental barrier, potentially endangering the fetus as well (Bhatt, 2000).⁴

For a variety of historical, cultural, and institutional reasons, sociocultural interpretations of biological differences are generally used to dictate gender roles in most societies, which contribute to the diversity and extent of human exposures to environmental toxicants. Depending on the country and community, exposure to pesticides (through agricultural work, subsistence farming, gardening, amount of food intake, and variety of foods consumed) is typically incongruent between women and men. Furthermore, body composition differences (such as blood flow, epidermal thickness, pulmonary function, cardiac output, total body water, plasma volume, and body fat, among others) between pregnant and non-pregnant women and men affect the extent of absorption of chemicals into the body and the distribution of these chemicals throughout the body (Mattison, 1999).⁵ Therefore, women's social and cultural roles, combined with their biological compositions, must be considered concomitantly when researching the impacts of environmental toxicants on women's health, as well as when developing and implementing health policies. I turn now to feminist discourse, which offers a useful framework for shaping future research and policy development regarding this issue.

Endocrine disruptors as a feminist issue

Many important feminist thinkers have long struggled to dissociate women's bodies from women's capacity to work and live as men do, but I am concerned with the usefulness of this project. Simone de Beauvoir, an early second-wave feminist, stressed the link between women's reproductive biology and patriarchal oppression by suggesting that only when women can dissociate from their reproductive responsibilities and enter the "cultural" world of men, will women be liberated from their oppression (Mellor, 1997).⁶ Feminist anthropologist Sherry Ortner also connected women's biology to their oppression due to women's physical/biological ties to reproductive responsibility versus men who are presumed to be more readily able to dissociate from the natural (physical/emotional) world and identify themselves more with culture (mental/rational) (cited in Alaimo, 2000). This position, however, can be critiqued for being ahistorical, and Stacy Alaimo outlines the problem with this argument: "Ironically however, by presenting a seamless, cross-cultural narrative of women's oppression that originates in her body, Ortner naturalizes woman's oppression" rather than challenging the patriarchal socially constructed hierarchy of culture/man over nature/woman (Alaimo, 2000: 3).⁷ In contrast, several ecofeminists have examined specifically the negative societal value placed on women's relationship between their bodies and nature compared to the positive value placed on men's connection to culture. Beyond the need to critique these value placements, the connections linking women to nature and men to culture must also be challenged.

Ortner's insights are interesting; however, women's exposure to environmental toxicants directly ties women's oppression to her body in such a way that constructionist perspectives cannot deny and current technology cannot undo on any global scale. As discussed above, many environmental toxicants are stored in body fat and are released into the bloodstream during normal reproductive events (lactation, menstruation, menopause, etc). Because women on average have higher percentages of body fat, and more life opportunities for these toxicants to alter normal endocrine system processes than men, EDCs *directly* link women's oppression to their bodies through environmental destruction. When analyzing the effects of EDCs on our reproductive health, I argue that we cannot deny the intricate relationship of our social and physical environments to our bodies; in this way, we are as much a product of our socially constructed culture as we are biologically tied to our environment.

A biological determinist approach to the body emphasizes the role women play in reproduction and mothering, resulting in various feminist agendas that prioritize new reproductive technologies to release women from the confines of their child-bearing obligations (as de Beavoir, 1953; Piercy, 1976; and Firestone, 1970, have suggested). Alternatively, other feminists (Daly, 1978; Griffin, 1978; Starhawk, 1979) celebrate women's biological roles as valuable and spiritual connections to nature that men cannot experience equally. To speak of "woman" as an essential category, based on biology or other commonalities, is problematic in that it does not account for differences among women, both in terms of biological and sociocultural experiences (see Mohanty, 2003). Essentialist feminist analyses of women's experiences that reduce women to their reproductive bodies make the mistake of ignoring the power of social institutions as sources of oppression.

And yet, some focus on the body, specifically women's reproductive and maternal roles, is instrumental in guiding policy that will protect women's bodies from dangerous toxic exposures. To understand the function of the body as a location for exploitation, the body itself must be examined. "Far from being an inert, passive, noncultural and ahistorical term, the body may be seen as the crucial term, the site of contestation, in a series of economic, political, sexual, and intellectual struggles" (Grosz, 1994b: 19). The pervasion of EDCs into our bodies is an example of one such struggle. Furthermore it is not only the "domination of the body by biological terms" that must be contested, but also "the biology itself, rethinking biology so that it too is able to see the body in terms other than those thus far developed" (Grosz, 1994b: 20). A new type of discourse, as well as consciousness, is needed to bring the consequences of environmental toxicants to the forefront of our minds with a sense of urgency for the future.

"Woman" as a category of analysis is, in many instances, essentialist, and is therefore problematic for activists and policymakers working on human rights issues. Yet, women's rights to the safety of her health, reproductive and otherwise, need to be measured and defined in autonomous terms that reflect the corporeal

relationship of women to their environment, and not in comparison to men's, or animals'. In the context of EDCs, the biological category of "woman" has crucial ramifications on our real world of policy if legislation is to be created to protect women's health from toxic environmental exposures. Especially with regard to EDCs, I am advocating for contextualization of women's bodies as a necessary project to approaching women's reproductive health safety.

A new discourse is imperative for women to obtain the power to negotiate for their right to live free from the effects of endocrine disrupting chemicals. Women must be able to condemn the existing patriarchal systems that are responsible for these injustices (lack of access to knowledge, lack of power to refuse chemical exposure, lack of research that studies actual women rather than animals and men, lack of participation in decision-making, and the lack of valuing of women's bodies in particular contexts) (see Grosz, 1994a).⁸

While reducing women solely to their reproductive bodies is problematic in that it is essentialist, scientists and researchers must value women's health and future generations enough to study the specific impacts of EDCs on women's bodies. Colborn, Dumanoski, and Myers (1997) explain the importance of this task:

Protecting the next generation from hormone disruption will require a much longer vigilance [than short-term prudence such as healthy consumption habits during pregnancy]—over years and decades—because the dose reaching the womb depends not only on what the mother takes in during pregnancy but also on the persistent contaminants accumulated in body fat *up to that point in her lifetime*. As discussed earlier, women transfer this chemical store built up over decades to their children during gestation and during breast-feeding (211-12).⁹

Women's bodies must be contextualized in a way that demands that policymakers account for biological differences between women and men, as well as legitimize different reproductive experiences among women, but without dismissing the variety of sociocultural, political, and economic factors that expose women to environmental toxicants.

The myth of "nature's most perfect food"

Maternal and child health advocacy requires researchers and policymakers to consider the paradox of the concomitantly powerful and vulnerable corporeal maternal environment. In addition to the prenatal environment, the role of the maternal breasts must be integrated into this discourse. Often referred to as "liquid gold," breast milk is generally considered to be the best source of nutrition for infants. The benefits of breastfeeding are numerous and range from providing immunities, nutrition, and maternal-infant attachment, to a reduction in early childhood diseases and conditions such as obesity, type 1 and 2 diabetes, asthma, and sudden infant death syndrome (SIDS), among others.

Breastfeeding is similarly considered to be protective of the mother's health, especially with regard to reducing maternal risk for type 2 diabetes, breast cancer, and ovarian cancer (Ip et al.). Breastfeeding has been demonstrated to be so beneficial, that the Healthy People 2010 midcourse review added to its initial objectives related to exclusive breastfeeding to "increase the proportion of mothers who breastfeed their babies" exclusively through three months to 60 percent and through six months to 25 percent (U.S. Department of Health and Human Services, 2005) [NOTE objectives 16-19d and 16-19e]. Several health organizations, including The American Academy of Pediatrics, recommend exclusive breastfeeding for the first 6 months, and continuing through 12 months and beyond as is determined to be mutually beneficial to the mother and child (Ip et al., n.d.).

Despite its many benefits, human breast milk is contaminated with a multitude of toxic chemicals found in the environment. With regard to persistent organic pollutants (POPs), the most contaminated human food is breast milk (Steingraber, 2003). As discussed earlier, environmental toxicants can bioaccumulate as they move up the "food chain," meaning that they increase in toxicity. Many synthetic chemicals are stored in body fat; the breast is an extremely friendly location for the concentration of these toxicants. Breast milk is the highest step on the "food chain," above the foods that adult humans eat; the toxicants stored in a woman's body become more concentrated as they are transmitted into milk produced by the breasts (Steingraber, 1999). Within the first six months of life, breastfed babies will exceed their lifetime limit of dioxin and "may receive five times the allowable daily intake of PCBs for a full-grown adult. Cow's milk with levels of PCBs this high would be too contaminated for sale in the United States" (Schettler et al., 1999: 205). The proportion of exposure from breast milk comprises a significant portion of a child's lifetime body burden (Anderson and Wolff, 2000).

Infant and maternal body burden is determined mostly by pharmacokinetics and the physiological process of lactation. The lipophilicity of POPs and their long half-life allows POPs to biomagnify in the body over time. These fat stores are mobilized during lactation and transferred into breast milk and thus excreted from the woman's body and consumed by the infant (Clewell and Gearhart, 2002; Massart et al., 2005; Nickerson, 2006). Most of the fat content in breast milk (about 60 percent) derives from the mother's bodily fat stores from years of accumulation, which includes years of accumulated toxicants (Steingraber, 2003).¹⁰ The toxicants are released into the bloodstream, transferred into the breast milk, and consumed by *my* daughter, who only knew breastfeeding to be her source of sustenance and comfort.

This transfer of toxicants from me to my daughter was actually beneficial to me. The longer the mother nurses her child, the more chemicals she releases from the stores of toxicants in her body and, over time, her milk becomes more pure. This means that each subsequent nursing baby receives fewer toxicants than his or her older sibling. The older the mother when she has her first child,

the more toxicants she has accumulated and the more contaminated her milk becomes (Clewell and Gearhart, 2002; Kunisue et al., 2006; Massart et al., 2005; Schettler, et al., 1999; Steingraber, 2003). “According to various studies of breast milk contamination, nursing babies take in the highest doses of contaminants they will experience in their entire lives—levels ten to forty times greater than the daily exposure of an adult. It is indeed tragic that breast-feeding is the only efficient way to remove these persistent chemicals from the human body” (Colborn, Dumanoski, and Myers, 1997: 215). The protective factors of breastfeeding may be due to the release of these stored toxicants from the mother’s body, thus reducing the concentration of EDCs and decreasing her potential for developing cancers of the reproductive system.

While researchers are able to study the levels of toxicants in breast milk, they have difficulty studying the harmful effects of these toxicants on children, especially since a control group of women with pure breast milk does not exist; there are only women with contaminated and less-contaminated breast milk. In addition, children who receive more contaminated breast milk also likely received more toxicants in their prenatal environment (Steingraber, 2003). Studies have shown that children’s exposure to environmental toxicants leads to neurological disorders such as hyperactivity, attention problems, and learning disabilities, as well as several forms of childhood cancer such as leukemia and Hodgkin’s disease (Steingraber, 2003; Wargo, 1998; Colborn, Dumanoski, and Myers, 1997).

A typical “scientific” approach to examining potential risks from toxicants in breast milk (to both mother and child), would evaluate the cost-benefit or risk-benefit of breast feeding to formula feeding.¹¹ This approach is problematic in that it encourages women to choose the less harmful option, without considering the socio-cultural and economic differences among women that may not permit such a choice. While making healthy choices is beneficial, the answer really lies in the reduction of all toxicants in our environment (Steingraber, 2003).

The seventh generation: Threatening our children’s birthright

The irresponsible use of chemicals and the manipulation of food in agricultural and biotechnology industries are global concerns. The use of EDCs in one country affects environmental, human, and animal health in other areas of the world. These problems are of specific concern to women across the globe as the bearers of future generations. Vandana Shiva (1990) uses the term “maldevelopment,” or “development deprived of the feminine, the conserving, the ecological principle,” to describe how “development” is androcentric, as well as anthropocentric, and at the root of inequality and injustice, and ultimately, poverty (191). A critical epistemological inquiry is necessary for feminists (and others) to understand whose experiences are legitimated (and whose are not) in globalized societies and the power structures that determine this legitimation. The success of this discourse within political and social projects

that advocate for women's health rights is reliant on recognizing women's bodies and women's health relationships to the environment as valuable and legitimate epistemological subjects.

When I was pregnant with my daughter, I actively attempted to make healthy lifestyle choices to ensure her the best health possible. I chose a natural, drug-free childbirth at a birthing center so that I could bring her into this world in the most peaceful, caring, and respectful manner I could provide. Although we maneuvered through several breastfeeding challenges, I continued to breastfeed until she was almost three because I believed it to be the healthiest choice and a wonderful experience for both of us.

To have to make a decision about whether or not breastfeeding is safe is an absurd and inconceivable choice for a mother to make. Breastfeeding, every child's birthright, must be protected; this can only be done when policy initiatives reflect respect for the interconnectedness of all life to the environment and value these relationships. Careless and risky use of toxic chemicals is threatening more than just our physical environment. Our maternal environments and consequently, our children's health, are under siege. Many Native American tribes teach a powerful method for understanding the cyclic nature of our actions and the need for sustainability by suggesting that in making every decision we are responsible for considering the impact on the seventh generation from now (LaDuke, 1999). This is a feminist issue in the largest sense: it is an issue for all the Earth's inhabitants and the future of the entire ecosystem.

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¹I believe that because the female body does not have a protective blood barrier unless pregnant (and even then it is permeable), that environmental toxicants have a greater potential for impacting female reproductive health and the health of their babies. Whereas the male testicles always have a blood barrier to protect the reproductive system (although sperm can also be harmed by toxicants), the female body is essentially "open," meaning that there is no blood barrier to keep toxicants from harming the reproductive system at any time in a woman's lifespan.

²These toxicants are able to pass through the placenta due to low molecular weight, electrical charge, and fat/lipid solubility. If a toxic chemical is relatively small and fat-friendly, it will more easily pass through to the placenta. Bigger chemicals might be metabolized by the placenta before passing through, which could be good or bad, depending on whether this process makes them more toxic. Also, some toxicants (cigarette smoke, PCBs, and car exhaust/nickel) can interfere with/damage the transport systems of the placenta and affect

the fetus that way (see Steingraber, 2003: 34-35).

³Pesticide application has been common since the middle of the nineteenth century (see Wargo, 1998: 6).

⁴Research suggests a potential link between pesticides and congenital malformations in children whose mother was exposed to endocrine disrupting chemicals EDCs during pregnancy (see Garcia, 2003). Male exposure to EDCs may also produce adverse reproductive effects such as low sperm count and decreased FSH levels (see Xu and Cho, 2003; see also Recio, et al., 2005).

⁵For more detailed information, see Mattison (1999).

⁶Mellor clarifies de Beauvoir's view nicely: "At the heart of 'male values' is the distinction between transcendence and immanence. The cultural world is created through transcendence of the immanence of humanity's embeddedness in nature and biology. Rejection of immanence means that human society is always constructed over and against the natural world. Far from celebrating women's connection with the immanence of the natural world ... de Beauvoir saw women's biology as the source of their inequality. If women are to be free, they must escape their embodiment" (1997: 78).

For de Beauvoir, once women transcend the limitations of their reproductive expectations, and thus become more akin to societally-valued men, women will be liberated from their unfortunate position as the "second sex."

⁷Whereas de Beauvoir and Ortner both ultimately link women's oppression to a natural corporeal connection to the earth, other feminists challenge this as an essentialist and biological determinist approach and turn instead to the social construction of gender for explanation. The concept of the social construction of gender attempts to liberate women from their oppression by identifying less with nature and more with culture. However, see Merchant (1996) for an explanation of how this is not a simple task: "But Nature as wilderness does not *become* male, nor does civilization *become* female in a reversal of the so-called universal association of female to nature and male to culture identified by Sherry Ortner.... Nor are nature and culture, women and men, binary opposites with universal or essential meanings. Nature, wilderness, and civilization are socially constructed concepts that change over time ... so too are the concepts of male and female and the roles that men and women act out..." (50). An attempt to liberate women through associating more with characteristics defined by "culture" not only fails to value that which is considered feminine or aligned with "nature," but also reinscribes both the dichotomy and the hierarchy inherent in the dichotomy.

⁸Grosz says that, "There can be no feminist position that is not in some way or other involved in patriarchal power relations; it is hard to see how this is either possible or desirable, for a purity from patriarchal 'contamination' entails feminism's incommensurability with patriarchy and thus the inability to criticize it" (1994a: 94). Also see further discussion on page 95.

⁹The comment in the brackets is my addition for clarification purposes.

¹⁰Thirty percent of the fat in breast milk derives from the mother's daily nu-

tritional intake and ten percent is produced directly by the mammary gland (see Steingraber, 2003: 262).

¹¹Formula is not toxic-free either. Formula must be mixed with water, which is often contaminated, and bottles contain endocrine-disrupting plasticizers that can leach into the milk (see Steingraber, 2003: 278).

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